whose description of that species I have followed closely, italicizing the more important differences. I have examined a large series of specimens.

I. bombayensis is common at Khas (where it occurs with *I. glandulosus*) and Khandalla; Mr. Kemp found a single specimen at Castle Rock. It is evidently nocturnal in habits and in the daytime its pupil is often reduced to a very narrow transverse slit. It hides under stones in damp places at the edge of small streams and in cracks in rocks kept wet by the spray of waterfalls.

V. Notes on Freshwater fish mostly from the Satara and Poona Districts.

Fish of the following species were collected in the Yenna at Medha in February and March:—

Euglyptosternum saisii (Jenkins).
Lepidocephalus thermalis (C. & V.)
Nemachilus botia (Ham. Buch.).
Nemachilus savona (Ham. Buch.).
Nemachilus anguilla, sp. nov.
Psilorhynchus tentaculatus, sp. nov.
Discognathus lamta (Ham. Buch.), Day.
Cirrhina reba (Ham. Buch.).
Barbus malabaricus, Jerdon.
Barbus kolus, Sykes.
Barbus ticto, Day.
Rasbora daniconius (Ham. Buch.).
Barilius bendelisis (Ham. Buch.).
Danio aequipinnatus (McCl.).
Chela boopis, Day.
Mastacembelus armatus (Lacép.).
Ophiocephalus gachua, Ham. Buch
Gobius bombayensis, sp. nov.

About several of these fish, having put on record their occurrence in the head waters of the Kistna, I have nothing further to say.

In small hill streamlets at Khandalla I obtained three species of fish:—*Nemachilus evezardi*, Day; *Psilorhynchus tentaculatus*, sp. nov. and *Discognathus nasutus* (McCl.). These I have already discussed at some length (pp. 113–117).

In addition to my own collection I have before me some interesting specimens of *Barbus* from the Satara district, sent me by Mr. C. D. McIver of the Public Works Department, a very keen student of the local fish-fauna. To these I shall refer, and with them to an interesting specimen of the same genus recently sent to the Indian Museum from Gauhati on the Brahmaputra by Mr. T. R. Phookun on behalf of the late Chief Commissioner of Assam.

I shall also discuss the Indian species of the genus *Discognathus*, so far as the material at my disposal permits me to do so.

Family SILURIDAE.

Euglyptosternum saisii (Jenkins).

1910. *Glyptosternum saisii*, Jenkins, *Rec. Ind. Mus.* V, p. 128, pl. vi, fig. 6.

A specimen from the Yenna (Vena) River at Medha in the Satara district agrees well with the type-specimens from Paresnath in Bihar except in being much larger; its total length is 121 mm.

In general facies the species resemble *Euglyptosternum* rather than *Glyptosternum* and I find that both in Dr. Jenkin's specimens and in my own microscopic horny teeth are scattered on the palate. They are, however, attached to skin and not to the bone and are not arranged in any definite manner. The tooth-band on the upper jaw is narrow as in *Glyptosternum*. I have examined the palate of *E. lineatum* and of several species of *Glyptosternum* and cannot discover any trace of scattered teeth.

Family CYPRINIDAE.

Lepidocephalus thermalis (C. and V.).

1889. *Lepidocephalicththys thermalis*, Day, *Faun. Brit. Ind.*, *Fishes*, I, p. 221.

Weber[1] has shown that the clumsy generic name by which this fish and its congeners were known to Day may be abbreviated to *Lepidocephalus*.

L. thermalis is characteristic of Peninsular India and Ceylon as distinct from the Indo-Gangetic river-systems. It is not uncommon in the Yenna River.

Nemachilus evezardi, Day.

(Plate I, figs. 2, 2*a*).

1878. *Nemachilus evezardi*, Day; *Fishes of India*, II, p. 613, pl. cliii, fig. II.

1889. *Nemachilus evezardi*, Day, *op. cit.*, p. 226.

Hitherto known from a single specimen (now in the Indian Museum) from a stream near Poona, this little loach is actually one of the commonest species in small streamlets in the Bombay Ghats. I obtained numerous specimens at Khandalla in the Poona district and my assistant Mr. J. W. Caunter collected others at Khas in the Satara district, while Mr. E. A. D'Abreu of the Nagpur Museum has recently sent me one from Pachmhari in the Central Provinces. All these places lie between 2,000 and 4,500 feet above sea level.

The species is stated by Day to differ from all other Indian species of its genus in possessing a pair of nasal barbels. These are merely prolongations of the processes that always occur between the two nostrils on either side of the head. The colouration of the fish varies considerably in different parts of the same streamlet. When the bottom is sandy the dark bars or spots on the sides are much less strongly marked than where it is of a dark colour.

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[1] *Indo-Australian Fishes*, III, p. 27 (1916).

At Khandalla I found *N. evezardi* with *Discognathus nasutus* and a new species of *Psilorhynchus* in hill streamlets nowhere more than a few feet in breadth. It frequented small pools, taking the place occupied by *N. montanus* in similar streamlets in the Eastern Himalayas.

Nemachilus savona (Ham. Buch.).

This loach is common in many of the smaller rivers of Peninsular India and the Indo Gangetic plain. I obtained several specimens from the Yenna River at Medha.

In fresh specimens the head and forequarters are of a rather bright olivaceous green, obscurely mottled; the posterior part of the body is of the same colour but with a variable number of pale vertical bars, which vary greatly in breadth but are always narrower than the green interspaces. A purplish black band embraces the posterior extremity of the caudal peduncle and there is a black spot at the root of the dorsal fin in front. This fin is opaque white with seven longitudinal rows of small black spots, while the caudal has similar rows of black spots arranged vertically.

Nemachilus botia (Ham. Buch.).

1878. *Nemachilus botia*, Day, *op. cit.*, p. 614, pl. clvi, fig. 5.
1889. *Nemachilus botius*, Day, *op. cit.*, p. 227.

This fish is perhaps the most widely distributed of the Indian species of the genus. It occurs in small streams all over northern and central India and also on the Shan Plateau, and is not absent from the Kistna as Day thought.

Specimens from Medha agree with Day's var. *aureus* in that the lateral line disappears behind the dorsal fin, but the number of rays in that fin seems to be variable.

Nemachilus anguilla, sp. nov.

(Plate I, fig. 3; plate III, fig. 1).

D. 10 (2/8). P. 13. V. 8. A 6 (2/4).

Habit elongate, shallow and somewhat compressed; total length $5\frac{1}{3}$ to $5\frac{1}{2}$ times that of head, $4\frac{3}{4}$ that of caudal fin, about 9 times the greatest depth of the body. Head narrow, conical; snout bluntly pointed, with 6 slender and rather short barbels, the rostral pair of which extend backwards almost as far as the anterior border of the eyes, while the outer maxillary pair almost reach their posterior border. Lips greatly swollen, corrugated; the upper lip with two short, stout digitiform processes in front; the lower lip interrupted in the middle line, with two or three longitudinal ridges on either side; mouth entirely ventral. Eye large and prominent, situated dorsally near the middle of the length of the head.

Pectoral fins long and narrow, extending backwards about $\frac{2}{3}$ the distance between their own roots and those of the ventrals; ventrals narrow, extending backwards about the same distance towards the anal; anal very short, a little deeper than the body; dorsal short, a little higher than the body, with its upper margin nearly straight but sloping rapidly downwards and backwards; caudal very long, deeply emarginate, with the two halves pointed. Scales small, absent from the head, hardly distinguishable on the ventral surface of the body. Lateral line complete or nearly so.

Natural colouration.—Head and body dull golden yellow; tip of snout scarlet; numerous transverse bars of dark olive green, usually broader than the interspaces, across the back; a row of large blackish spots or blotches running along the mid-lateral line and sometimes coalescing, extended on to the caudal fin. Fins yellowish; dorsal with an anterior scarlet border and caudal broadly edged both above and below with the same colour. Red markings evanescent.

I have examined three specimens, the largest of which is 57 mm. long.

Type-specimen.—F $\frac{9692}{1}$, *Zool. Survey of India* (*Ind. Mus.*).

Locality.—Yenna River at Medha, Satara district, Bombay Presidency.

Psilorhynchus tentaculatus, sp. nov.

(Plate I, figs. 4, 4*a*; plate III, fig. 2).

D. 9·10 (3/6-7). P. 15. V. 9. A. 6 (2/4). L. l. 37. L. t. 6/3$\frac{1}{2}$.

A very distinct species, distinguished from *Ps. balitora* by the possession of a pair of rostral barbels, by the fact that the dorsal fin commences immediately above the ventrals, etc.

Size small; back moderately elevated; ventral surface flat. Total length 5 to 5$\frac{1}{2}$ times length of head, about 5 times length of caudal fin and 4$\frac{1}{2}$ to 5 times greatest depth of body. Eye 2$\frac{3}{4}$ to 3$\frac{1}{2}$ times in length of head. A pair of short barbels on the snout. Upper lip long, fringed, plicate; lower lip bilobed, covered with minute tubercles. Five outer pectoral rays undivided, flattened; pectoral not nearly reaching root of ventral when adpressed; ventral a little longer than in *P. balitora*, with a small fleshy appendage at its root in the male; anterior border of dorsal immediately above that of ventral; the last undivided dorsal ray considerably shorter than the first branched ray; caudal bilobed, the lobes rounded. Lateral line complete, running along caudal peduncle. The pharyngeal bones very slender; their teeth long, narrow and pointed, 11 in number, arranged in three rows, 2 in the outer row, 5 in the middle row and 4 in the inner row, grouped close together on a very distinct outward protuberance of the bone; the two outer teeth less sharply pointed than the others. The air-bladder well developed and distinctly divided into two parts.

Head and body dark purplish-grey or black, paler immediately above and below mid-lateral region; ventral surface white; operculum strongly iridescent, edged with white behind; a black horizontal bar or spot on the caudal peduncle edged with white posteriorly; fins whitish; dorsal more or less infuscated and with a black spot on each branched ray, caudal with its central part infuscated and with a vertically oval black spot at its base.

My largest specimen is less than 45 mm. long.

Type-specimen—F. 9695/1, *Zool. Survey of India* (*Ind. Mus.*).

Distribution.—Abundant in small hill-streamlets at Khandalla in the Poona district (2-3,000 feet), less common in the Yenna River at Medha in the Satara district (2,000 feet).

Genus **Discognathus**, Heckel.

(Plate II, figs. 1-3).

1868. *Discognathus*, Günther, *Cat. Fishes Brit. Mus.* VII, p. 68.

Both the name and the species of this genus have been subjected to many vicissitudes and the Indian forms are still imperfectly known The earlier writers on Indian ichthyology, notably Buchanan and McClelland, described a considerable number of so-called species that would now be placed in the genus, but they paid little attention to sexual differences or individual variation and their descriptions were too brief to be definitive. Day in his *Fishes of India* (1878) and his volume in the *Fauna of British India* (1889) recognized three species, *D. lamta* (Ham. Buch.), *D. jerdoni* and *D. modestus*. Günther, however, in his British Museum Catalogue (1868), though he also recognized three Indian species, gave them different names and different definitions: he called them *D. lamta*, *D. macrochir* and *D. nasutus*. Jenkins (*Rec. Ind. Mus.* III, p. 291: 1909), with Day's specimens before him, was of the opinion that they represented a single species, possibly with local varieties, while I pointed out in 1913 (*Journ. As. Soc. Bengal*, n. s. IX, p. 36) that a considerable number of forms occurred in different parts of the Indian Empire that were at least worthy of racial distinction. In the meanwhile Vinciguerra[1] had not only discussed the form he believed to be Buchanan's *Cyprinus lamta* but had also described a very distinct Burmese species under the name *D. imberbis*. Finally, in the early part of the present year, I was able to provide evidence that two distinct species occurred in the Southern Shan States and that one of them was the *D. lamta* of Day (*Rec. Ind. Mus.* XIV, p. 45).

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[1] *Ann. Mus. Stor. Nat Genova* (2) IX (XXIX), pp. 275-280, figs. (1889).

Since I discussed the collection from the Inlé Lake I have had an opportunity of examining a large series of fresh and well preserved specimens of the two commonest Indian forms from the Deccan and elsewhere. The names most convenient for these two forms are *D. lamta*, Day and *D. nasutus* (McClelland). I give Day and not Buchanan as the author of the former, because it is impossible to be sure as to the species to which Buchanan first applied the name *Cyprinus lamta*; his original figures in the library of the Asiatic Society of Bengal cast no light on the subject.

A great deal of the uncertainty about the Indian species of the genus has arisen from the fact that the marked and constant structural characters which separate these two forms are to some extent concealed by bad preservation of specimens. The essential differences between *D. lamta* and *D. nasutus* (= *D. modestus*, Day) are correlated with the fact that whereas the former lives in the pools of larger streams in or near the plains or even in upland lakes, the latter is an inhabitant of mountain torrents. In *D. lamta*, although the fish can cling to vertical surfaces by means of its mental disk, the abdomen is not flattened, the pectoral fins are set obliquely on the sides of the body and the rays are not greatly flattened or expanded. In *D. nasutus* on the other hand the fins and chest are modified to form an organ of adhesion, as is well shown in fig. 2*a*, pl. II. Unless great care is exercised in preserving specimens of *D. lamta*, however, the ventral surface collapses and though the structure of the pectoral fins remains of course unchanged, their relations to the chest and to one another are distorted. The form I describe here as *D. gravelyi* is allied to *D. lamta*, from which it differs in outline, in the shape of the head and in the form of the mental disk.

The form Day called *D jerdoni* seems to me to be distinguished from *D. lamta* by characters which are quite apparent when adult specimens are compared.[1] They lie mainly in the shape and proportions of the body and the relative size of the head and eye.

D. macrochir (McCl.) from Assam is evidently allied to *D. nasutus*, but may be distinct.

Two forms of the genus occur in Syria and Mesopotamia. One of these (*D. rufus*, Heckel) I regard as a variety of *D. lamta*, while the other (*D. variabilis*,[2] Heckel) differs from all the Indian forms in having only one pair of barbels. A form has been described from Southern Arabia and the Punjab Salt Range the male of which bears a forwardly directed tubercular appendage on the head, but no specimens of this form are at present in Calcutta The only species known from the Malay Archipelago is *D. borneensis*, Vaillant, which has larger scales than any Indian species.

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[1] Since this paper was written I have examined a good series of fresh specimens from the Bhavani River at the base of the Nilghiris. They fall definitely into three species, two of which are distinguished from all those included in my key by the possession by the adult male of a conical tuberculate process between the nostril. I hope to discuss this new material shortly.

[2] This species also occurs in the Helmand basin, possibly within the limits of the Indian Empire. See Tate Regan, *Journ. As. Soc. Bengal*, (n.s.) II, p. 8 (1906).

Key to the Asiatic forms of Discognathus *at present described.*

I. No barbels. L.L. 44	*D. imberbis.*
II. Two barbels. L.L. 38-40	*D. variabilis.*
III. Four barbels. L.L. 28	*D. borneensis.*
IV. Four barbels. L.L. 32-36.	
A. Pectoral fins entirely horizontal, with their rays broad and flat; chest flat, without scales.	
1. Pectoral fins longer than head, their tips extending nearly to base of ventrals ...	*D. macrochir.*
2. Pectorals hardly longer than head, their tips not approaching the base of the ventrals	*D. nasutus.*
B. Pectoral fins set obliquely on the sides of the body; chest convex, with scales.	
1. Pectoral fins longer than head, their tips approaching the base of the ventrals; eye much nearer margin of opercle than tip of snout; 2nd dorsal fin-ray slender ...	*D. gravelyi.*
2 Pectoral no longer than head, not approaching base of ventrals; eye near middle of head; 2nd dorsal fin-ray stout.	
a. Posterior barbels longer than anterior; pectorals directed backwards and upwards, arising some distance from ventral surface	*D. lamta* var. *rufus.*
b. Barbels subequal, anterior pair usually a little longer; pectorals directed backwards and a little downwards, arising immediately above ventral surface.	
i. Length of head 5 to 5½ times in total length; dorsal profile convex in adult male ...	*D. lamta (s.s.)*
ii. Length of head 6 to 6½ times in total length; dorsal profile nearly straight in adult male	*D. jerdoni.*

Discognathus lamta (Ham. Buch.), Day.

(Plate II, figs. 1, 1*a*).

1841. *Chondrostoma mullya*, Sykes, *Trans. Zool. Soc. London*, II, p. 359.
1889. *Discognathus lamta*, Day, *Faun. Brit. Ind. Fish.*, I, p. 246, fig. 87.
1909. *Discognathus lamta*, Jenkins, *Rec. Ind. Mus.*, III, p. 291 (in part).
1913. *Discognathus lamta*, Annandale, *Journ. As. Soc. Bengal*, (n.s.) IX p. 36, fig. 1.
1918. *Discognathus lamta*, *id.*, *Rec. Ind. Mus.*, XIV, p. 45.

The form to which I give this name is certainly the *D. lamta* of Day, but there is some doubt as to whether Buchanan's *Cyprinus lamta* was not rather the form called *D. modestus* by Day and *Platycara nasuta* by McClelland. In any case, as the point cannot be settled satisfactorily, it is best to accept Day's nomenclature so far as *D. lamta* is concerned.

In this species the abdomen is naturally convex (it is apt to collapse in preserved specimens) and the pectoral fins are set on the sides of the body a short distance above the ventral surface and somewhat obliquely. These fins, though sometimes as long as the head, are usually a little shorter; the distance between their tips and the base of the ventrals is about ½ their own length; they are not greatly expanded and only the outermost ray is simple and flattened. The eye is variable in size even in specimens from precisely the same locality, but its length is usually contained at least very nearly 5 times in the length of the head: its upper border is situated considerably below the upper profile of the head. The upper profile of the body is arched. A broad but shallow depression runs across the snout of the adult male a little in front of the eyes and the region immediately in front of and behind it is covered with prominent tubercles.

D. lamta is common in the river at Medha, where it is captured in considerable numbers for food by fishermen using cast-nets. Specimens are very similar to those recently obtained in the Shan States (*op. cit.*, 1918), but perhaps a little darker in colour. The largest collected is 152 mm. long. The sides and back of the head and body are dark olivaceous green. Traces of a darker mid-lateral stripe extending on to the caudal fin can be detected, and of a small dark spot just behind the upper angle of the opercle. The free border of the opercle is paler and the ventral surface yellowish. The fins are pale olivaceous.

Discognathus jerdoni, Day.

1889. *Discognathus jerdoni*, Day, *op. cit.*, p. 247.

This species is distinguished from the former by the following characters:—

(*a*) The head is relatively smaller.
(*b*) The eye is as a rule larger in proportion to the head.
(*c*) The pectoral fin is much shorter than the head and its tip is further removed from the root of the ventral fin.
(*d*) The body is less elevated, the dorsal and ventral profiles being nearly parallel in the adult male.

I can detect no real difference in the scales and fin-rays.

Discognathus nasutus (McClelland).

(Plate II, figs. 2. 2*a*).

1839. *Platycara nasuta*, McClelland, *As. Res.* IX(2) (*Ind. Cypr.*), p. 300, pl. lvii, fig. 2.
1871. *Mayoa modesta*, Day, *Journ. As. Soc. Bengal* (2)XL, p. 108, pl. ix, fig. 2.
1889. *Discognathus modestus*, Day, *op. cit.*, p. 247.
1890. *Discognathus lamta*, Vinciguerra, *Ann. Mus. St. Nat. Genova* (2)IX, p. 270, fig.

McClelland's figure is a somewhat exaggerated presentiment of an adult male of this form, which must be accepted as specifically distinct in that it exhibits quite definite and constant structural modifications. It differs from *D. lamta* in the following characters :—

(*a*) The head is flattened and depressed in such a way that the upper border of the eye is practically co-terminous with the upper profile. The whole of the upper profile is straight and horizontal.

(*b*) The abdomen is flat, and the chest is both flattened and expanded.

(*c*) The adhesive organ on the lower lip is much larger.

(*d*) The pectoral fins are enlarged and expanded, being always longer than the head and separated when adpressed from the ventrals by a distance less than half their own length. They are set on the body horizontally at the junction of the ventral and lateral surfaces and form with the chest an organ of adhesion.

(*e*) Several of the outer pectoral rays are simple and flattened.

(*f*) The whole of the dorsal and lateral surfaces is nearly black, the ventral surface dead white.

(*g*) The length rarely if ever exceeds 110 mm.

This species is found only in small hill streamlets. It occurs in the Himalayas, the hills of Assam, the Western Ghats, the hills of the Central Provinces and probably those of Burma. Vinciguerra's figure cited above seems to represent this species rather than *D. lamta*, but probably he had examined specimens of both.

Discognathus gravelyi, sp. nov.

(Plate II, figs. 3, 3*a*).

Having now been able to compare good series of well-preserved specimens of *D. lamta* from districts so far apart as the Shan States and the Deccan, and having found certain differential characters quite constant, I no longer hesitate to describe the new species referred to in my recent account of the fish of the Inlé Lake (*Rec. Ind. Mus.* XIV, p. 45 : 1918). It is distinguished from *D. lamta* by the different shape and the larger size of its mental disk, by the different shape of the head, by its larger scales and apparently also by difference in the formulae of the fin-rays.

D. 10(2/8). P. 14. V. 8. A 7(2/5). L. tr. $3\frac{1}{2}/3$.

The total length is $5\frac{3}{5}$ times the greatest depth of the body and a little more than 5 times the length of the head. The length of the eye, which is large and prominent, is contained a little more than $4\frac{1}{2}$ times in that of the head. The snout is somewhat produced and in the adult male there is a deep but narrow transverse groove just behind the tip. The dorsal profile slopes abruptly from a point a little in front of the dorsal fin to the tip of the snout and, although the head is not flattened, the upper border of the orbit is practically co-terminous with its upper surface ; behind the dorsal fin the profile is highly convex. The upper lip is very broad, the lower lip greatly enlarged, the mental disk large and subcircular ; the fringe of the lower lip broad, with the margin semicircular. In the adult male there is a semicircle of glandular openings beneath and behind the eye. There are four short barbels, those at the angle of the mouth being particularly small. The ventral surface is convex and the scales extend all over the chest. The pectoral fins are longer than the head and broad in proportion, but they are lateral and oblique. They extend backwards almost as far as the base of the ventrals, but their rays are not flattened and expanded. The ventrals are also large and almost reach the anal when adpressed. The caudal is deeply forked and the upper lobe is a little smaller than the lower. The dorsal is short ; its unbranched rays are slender and not at all ossified, but the second is longer than the head.

Colouration.—Head and body purplish-brown, with a darker mid-lateral streak and a dark horizontal lunate mark on the caudal peduncle ; ventral surface slightly paler ; pectoral fins infuscated, with pale edges ; other fins pale yellowish clouded towards the base with a dusky brown.

The only specimen I have seen, an adult male, is 112 mm. long.

Type-specimen.—F 9694/1, *Zool. Survey of India* (*Ind. Mus.*).

Locality.—Stream at He-Ho, Yawnghwe State, Southern Shan States, Burma: alt. 3,800 feet.

The type-specimen was taken with typical specimens of *D. lamta*.

Genus **Barbus**, Cuvier.

There are few genera among the freshwater fish that have received greater difference of treatment from different ichthyologists than this. Day in his works on Indian ichthyology recognizes three subgenera or groups of species, while Boulenger in his " Fishes of the Nile" and in his recent monograph of the freshwater fishes of Africa divides the genus into a number of sections for which he does not provide names. Weber, on the other hand, in the third volume of his " Indo-Australian Fishes " recognizes a number of distinct genera among the species placed in *Barbus* by other authors, but denies the occurrence of *Barbus* s.s. in the Malay Archipelago. So far as specific limits and definitions are concerned there is still much confusion among the Indian species, and this is the case not only with rare and inconpicuous forms but even with some of the largest and most conpicuous. Indeed, there is no group in which confusion is greater than that of the Mahseer so familiar to Indian sportsmen.

I have not the material to attempt a revision of the Mahseer group, specimens of which are difficult to preserve in large series on account of their size, but two species have recently come to my notice which it seems justifiable to rescue from the oblivion of synonymy as they possess differential characters of a marked nature and likely to be constant. These species are *Barbus putitora* (Ham. Buch.) and *Barbus mussullah*, Sykes. That Hamilton's *mossul* and Jerdon's *hamiltonii* differ in some respects from the *forma typica* of *Barbus tor* the collection in the Indian Museum provides abundant evidence, while specimens from the upper Kistna seem to differ from any of these; but the question whether the differences should be considered specific or merely racial must be left to be answered with more extensive experience.

Another group of species in which confusion exists so far as the Indian forms are concerned is that popularly called Carnatic Carp. It is, indeed, doubtful how far this designation has any scientific basis, for certain species so called have no more than a distant resemblance to *Barbus carnaticus* (Jerdon).

I have nothing particular to say about the species of *Barbus* (*B. malabaricus, B. kolus* and *B. ticto*) that I obtained at Medha myself, but Mr. McIver has sent me specimens of three species from the Kistna near Satara that are of considerable interest. Two of these may be called Mahseer, while the third is known locally as the Carnatic Carp.

Barbus tor (Ham. Buch.).

(Plate III, figs. 3, 3*a*).

It is not yet possible to discuss the races or species of the Mahseer, of which six or seven probably exist in different parts of the Indian Empire, in a satisfactory manner. Specimens sent me from the Kistna River near Satara by Mr. McIver certainly differ both from the north Indian and the south Indian forms and probably represent an undescribed race, which has only 3 rows of scales above the lateral line and 12(3/9) dorsal fin-rays. Mr. McIver informs me that it grows to a large size.

Barbus mussullah, Sykes.

(Plate III, figs. 4, 4*a*).

1841. *Barbus mussullah*, Sykes, *Trans. Zool. Soc., London* II, p. 356, pl. lxi, fig. 4.

Sykes's description of this fish is inadequate and his figure inaccurate, but he refers to and illustrates one trivial but apparently constant character that gives me confidence in identifying specimens sent by Mr. McIver. This character is the presence under the eye of a group of small tubercles not confined to one sex and visible with the aid of a lens in quite young fish.

A more important differential character, not recognized by Sykes but shown in his figure, is, however, to be found in the structure of the mouth, the opening of which is much more oblique than in any race of *Barbus tor*. The extremity of the maxillary lies directly under the middle part of the eye. This feature is well shown on plate III. There are 13 (3/10) dorsal and 8 (3/5) anal fin-rays; 25-26 scales in the lateral line, 4 rows of scales above it and 3 below.

B. mussullah is common in the upper Kistna, where it occurs with the local race of *B. tor*. The Maharatta fishermen of Satara never fail to distinguish the two species. *B. tor* they call *Kudis*; *B. mussullah*, *Masundi*. Mr. McIver, to whom I am indebted for this information, has caught a specimen of the *Masundi* 21 lbs. in weight.

Barbus putitora (Ham Buch.).

(Plate III, fig. 5).

1822. *Cyprinus putitora*, Hamilton, *Fishes of the Ganges*, p. 303.

Having received some time ago a large *Barbus* from Gauhati in Assam that was evidently related to but distinct from any of the races or species at present included under the name *Barbus tor*, I have made a careful examination of it and have compared it with the specimens labelled by that name in the collection of the Indian Museum. From these specimens it differs not only in shape and proportions but also in having only two undivided rays in the dorsal fin and only 15 rays in the pectoral fins. As these characters are given by Hamilton among those proper to his *Cyprinus putitora*, I have little doubt that our specimen is identical with that form and must be called *Barbus putitora*. It may be redescribed as follows:—

D 10-11 (2/8-9). P. 15. V. 9. A 7 (2/5). L. 1 27. L. tr. 3½/2½.

The habit is stout and though the body is somewhat compressed it may almost be described as subcylindrical; its depth is contained only a little more than 4 times in the total length. The length of the head is contained between 4½ and 4¾ times in the total length and is thus distinctly less than the greatest depth of the body. The snout is blunt and very little declivous; the length of the part of the head in front of the eye is about ⅔ of that of the part behind the eye. The upper profile of the head and body is feebly arched, the curve of the lower profile a little more marked. The mouth is protrusible and nearly horizontal; the posterior end of the maxilla is in front of the eye; the lower jaw is shorter than the upper. The lips are thick and fleshy but not produced forwards; the lower lip is slightly retroverted in the middle line. There are 4 barbels; the anterior pair is much shorter than the posterior; the latter extend backwards to a point under the middle of the eyes. The nostrils are a little nearer the eyes than the tip of the snout. The eyes are rather small, their diameter being contained about 7¾ in the length of the head. The cheeks are quite smooth. All the fins are relatively small. The dorsal is short and about ⅔ as deep as the body. The first dorsal ray is stout and bony but short, the second, which is also bony, tapers to a fine point and is about $\frac{2}{5}$ as long as the head; it is quite smooth. The anterior root of this fin lies immediately above that of the ventrals. The pectorals are particularly small, their length is between $\frac{2}{3}$ and $\frac{3}{4}$ that of the head. The ventrals, from which they are widely separated, are considerably shorter; their tips do not quite reach the vent. The anal is distinctly pedunculate. The caudal peduncle is well differentiated but less than twice as long as deep; it is strongly compressed. The caudal fin is short; its upper lobe is distinctly sharper and more produced than the lower lobe. The scales are very large; sometimes notched in front. Their exposed parts are marked with delicate longitudinal striae. The lateral line is rather obscure.

The only specimen of this fish that I have seen was sent from Gauhati on the Brahmaputra by Mr. T. R. Phookun. It is 115 cm. long and is preserved stuffed, its number in our register being F 9654/1.

Barbus jerdoni, Day.

(Plate II, fig. 4, var. *maciveri*, nov.).

1889. *Barbus jerdoni*, Day, *op. cit.*, p. 312.
1889. *Barbus dobsoni*, *id.*, *ibid.*

As Day himself suggests in his *Fishes of India* (p. 568), the two forms included in the above synonymy are merely varieties or local races of the same species. The only constant difference that I can find between the specimens in his own collection are that the body is considerably deeper in *B. dobsoni* than in *B. jerdoni* and that there are more scales below the lateral line in the former. Mr. McIver has sent me specimens from the Kistna River near Satara that represent a third variety, which has the following differential characters :—

D. 13 (4/9). A. 8 (3/5). L. l. 31-33. L. tr. $5\frac{1}{2}/3\frac{1}{2}$.

Depth of body $3\frac{2}{3}$ to 4 times in total length; length of head about $5\frac{2}{5}$ times in total length; diameter of eyes $3\frac{1}{2}$ times in length of head. The body is brownish above and the caudal, dorsal and anal fins are tipped with black. The specimens I have examined are small (not more than 151 mm. long), but Mr. McIver tells me that the form attains a weight of 20 to 25 lbs. I propose for it the name var. *maciveri*. The Maharatta name at Satara is *purgi*; Mr. McIver refers to the fish as the "Carnatic Carp of the Krishna."

Type-specimen of variety.—F 9576/1, *Zool. Survey of India* (*Ind. Mus*).

Family OPHIOCEPHALIDAE.

Ophicephalus gachua, Ham. Buch.

This widely distributed species, of which specimens were taken in the river at Medha and in artificial ponds at Khandalla, is much more variable in the number of its dorsal and anal fin-rays than published descriptions indicate. The Assamese form *O. stewarti*, Playfair, and my own recently described *O. harcourt-butleri* from the Southern Shan States may ultimately prove to be no more than local races. In both of these the number of vertical fin-rays is variable. In *O. harcourt-butleri*[1] there are from 28 to 38 in the dorsal fin and from 16 to 25 in the anal. Dr. Chaudhuri tells me that in a series of *O. stewarti* from Shillong he finds the corresponding numbers to be 34 to 39 and 22-27. In the typical *O. gachua* the variation is at least as great as in the latter, but it will be better to defer a more precise statement until good series are examined from numerous localities.

Family GOBIIDAE.

Gobius bombayensis, sp. nov.

(Plate I, fig. 5).

A small species resembling *G. viridipunctatus*, Day, but with fewer vertical fin-rays and without enlarged canine teeth; allied to *G. chilkensis*, Jenkins,[2] but with a much longer snout and smaller caudal fin.

D. 6-1/7-8. P. 17-18. A. 1/7. L.e. 28-29. L. tr. 7.

Size small; habit slender, slightly compressed. Total length about $4\frac{1}{4}$ the length of the head and about $5\frac{1}{4}$ the greatest depth of the body. Dorsal profile slightly arched. Caudal peduncle distinct, rather more than twice as long as deep. Head coarse; snout blunt, rather short, less than $\frac{1}{2}$ as long as the part of the head behind the eye, nearly twice as long as the eye. Mouth large, slightly oblique; the posterior extremity of the maxilla situated below the middle of the eye; lower jaw very slightly longer than the upper; teeth small; tongue notched in front, without teeth. Eye large and prominent, its length contained 5 times in the length of the head. Dorsal fin low, with none of the rays elongate.

Colouration.—Pale yellowish, irregularly blotched with black. Anterior dorsal fin infuscated, with a rather deep whitish border; posterior dorsal with three longitudinal rows of small dark spots; other fins irregularly infuscated, the caudal with obscure and irregular vertical dark bars.

The largest specimen examined is 42 mm. long.

Type-specimen.—F 9698/1, *Zool. Survey of India* (*Ind. Mus.*).

Locality.—The species is not uncommon in the Medha river at Satara.

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[1] *Rec. Ind. Mus.*, XIV, p. 54, fig. 2, pl. ii, fig. 7, pl. iv, figs. 16, 17 (1918).

[2] *Rec. Ind. Mus.*, V, p. 137, pl. vi, fig. 2.